

FIG. 1

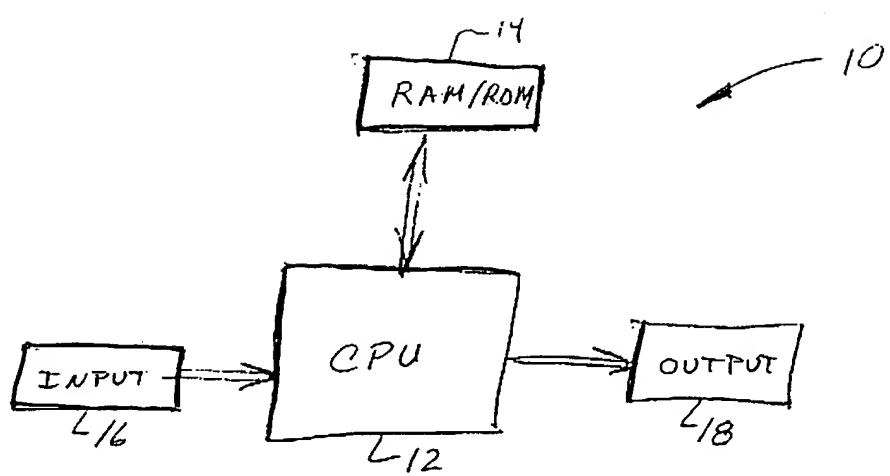


FIG. 2

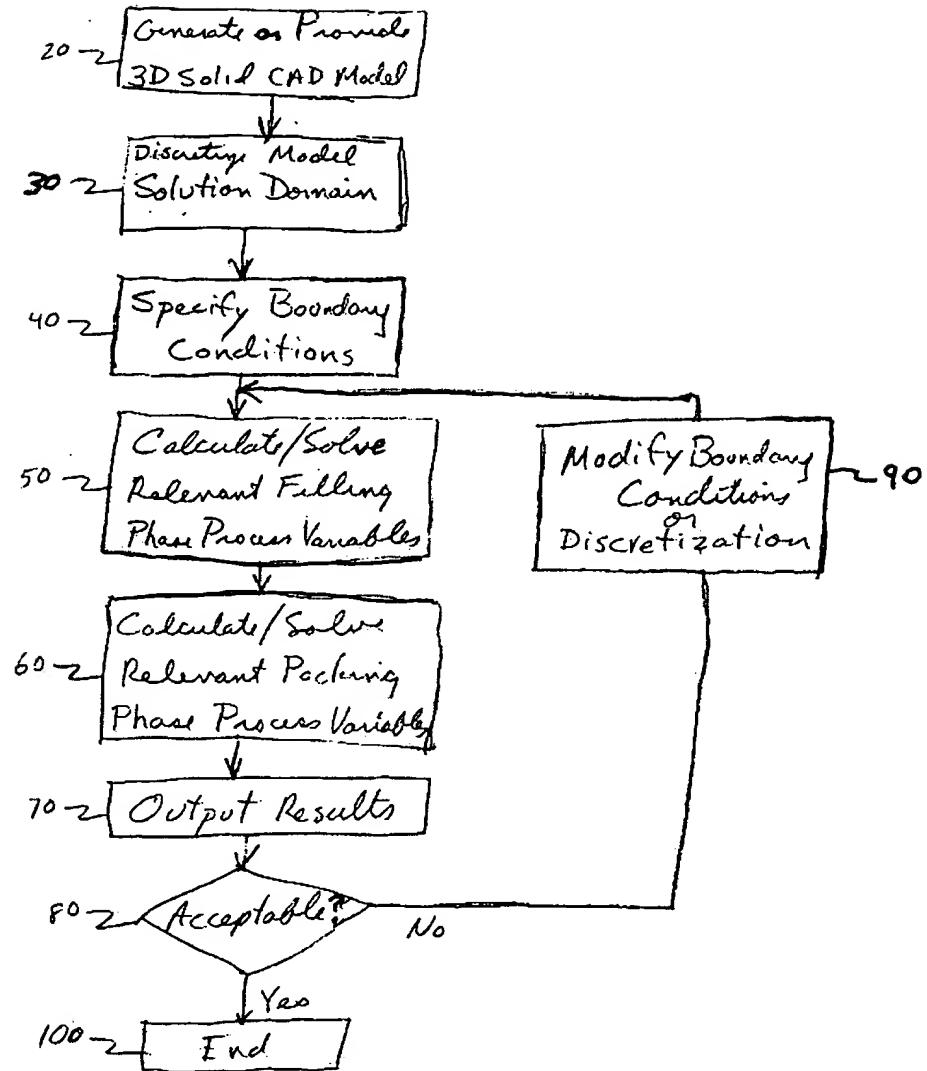


FIG. 3A & FIG. 3B

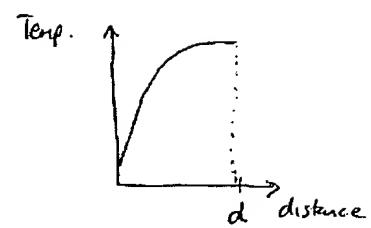
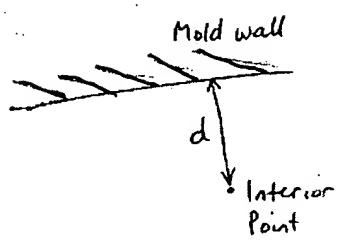


FIG. 4

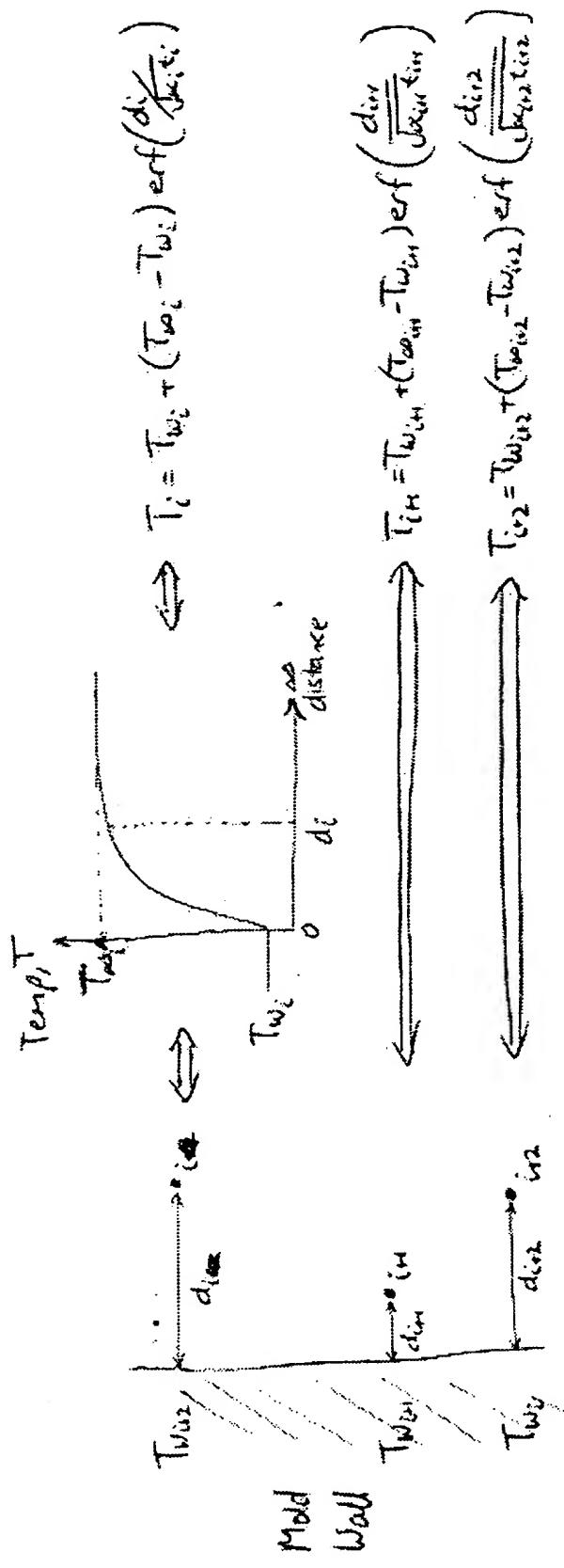
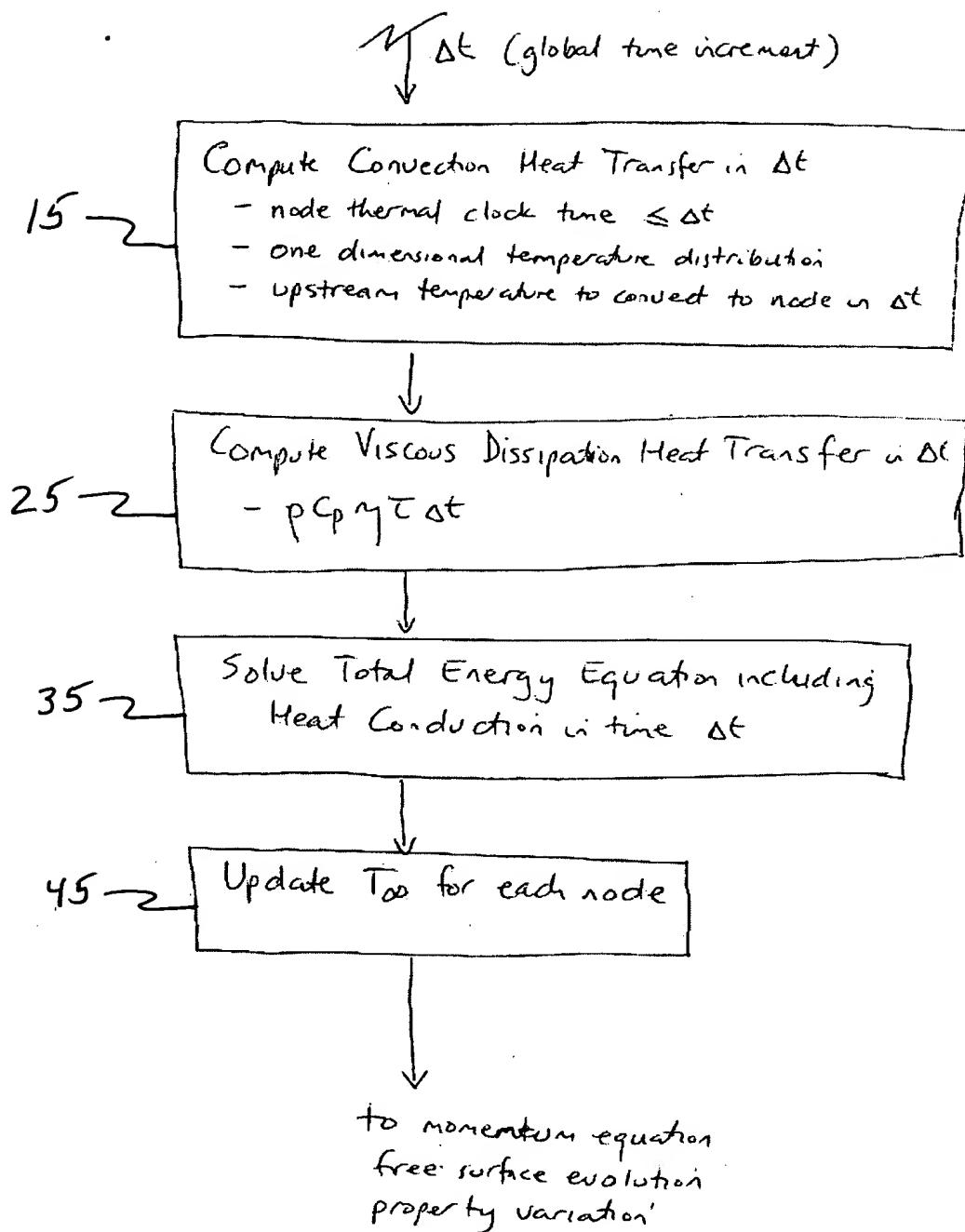
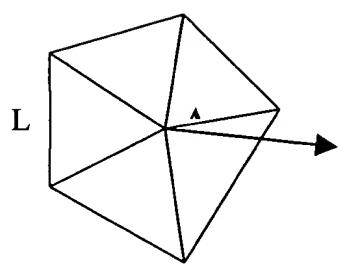


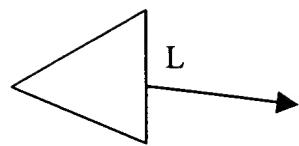
FIG. 5



**FIG. 6**



**FIG. 7**



**FIG. 8**

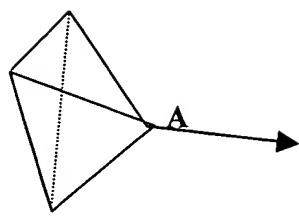


FIG. 9

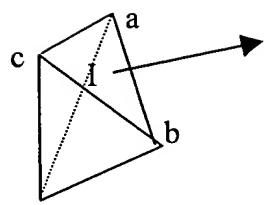
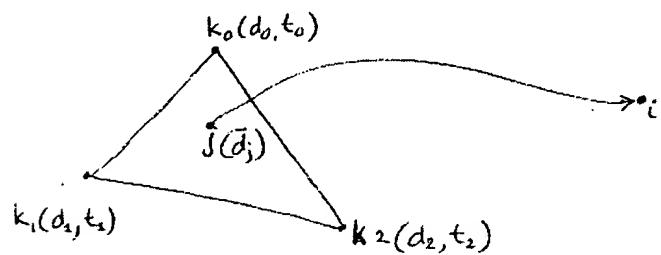


FIG 10A & 10B



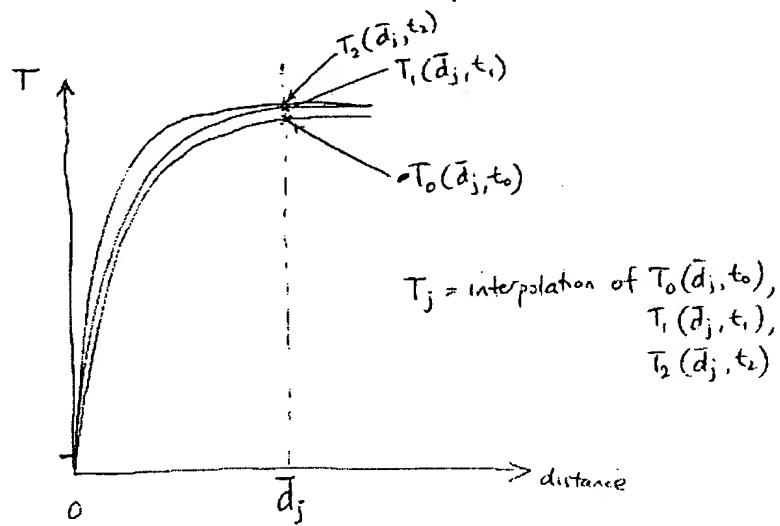
$i$  = target node

$j$  = upstream point

$k_0, k_1, k_2$  = nodes of element containing the upstream point

$(d_0, t_0), (d_1, t_1), (d_2, t_2)$  are the distance to the wall and node thermal clock times for each upstream node respectively

$\bar{d}_j$  = interpolated distance to the wall of the upstream point.

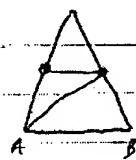


# FIG. 11

For a face with one edge refined:



For a face with two edges refined:  
where  $A < B$



For a face with all three edges refined

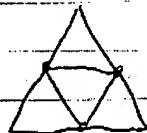
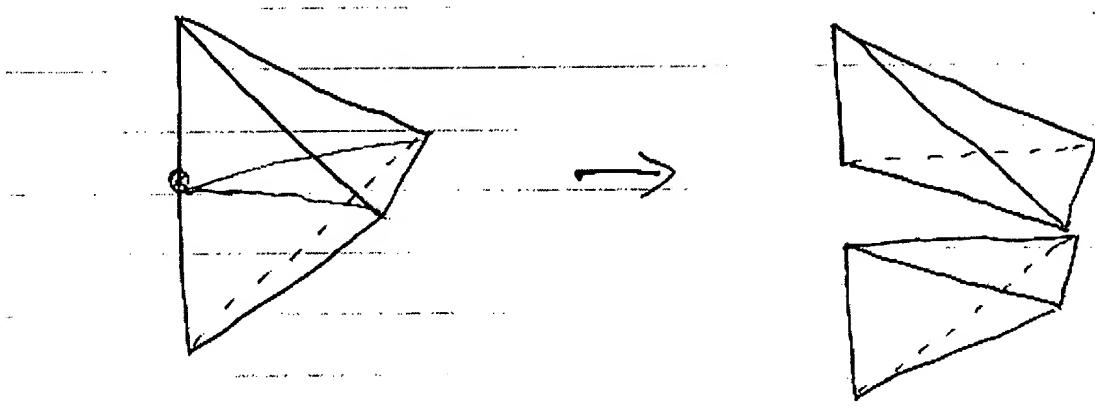


FIG 12

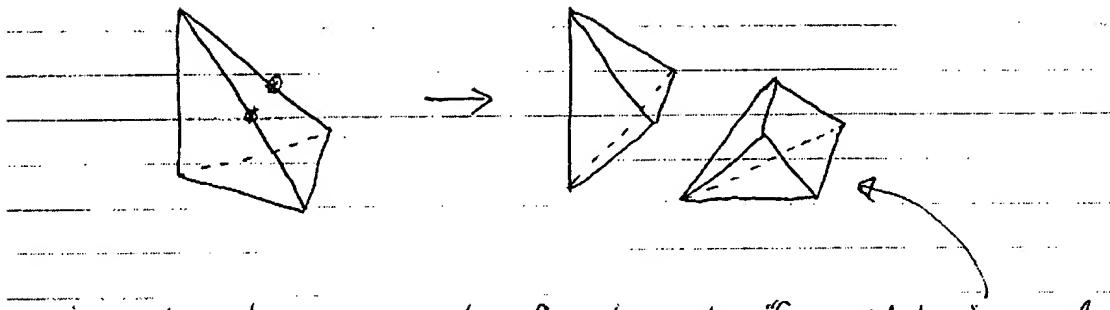
Template for splitting a tet on:

1 edge:



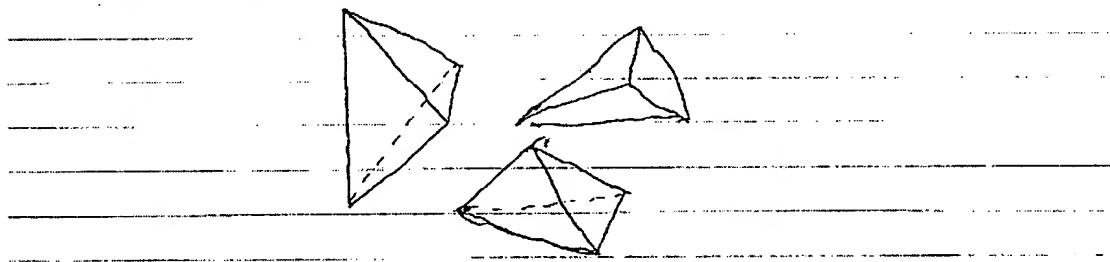
# FIG. 13A

Template for splitting a tet on  
2 edges



Note that there is a template for splitting the four-sided base pyramid

This results in:



As a close group with new edges mark

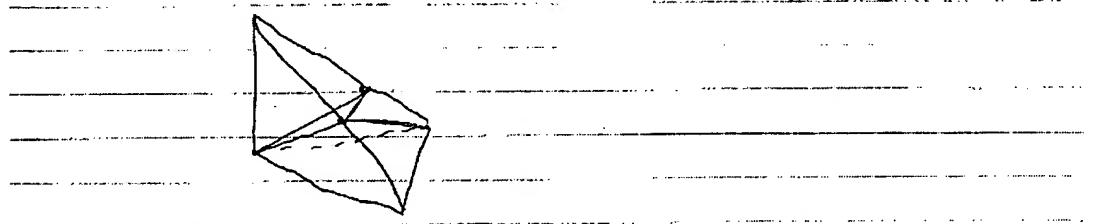


FIG. 13B

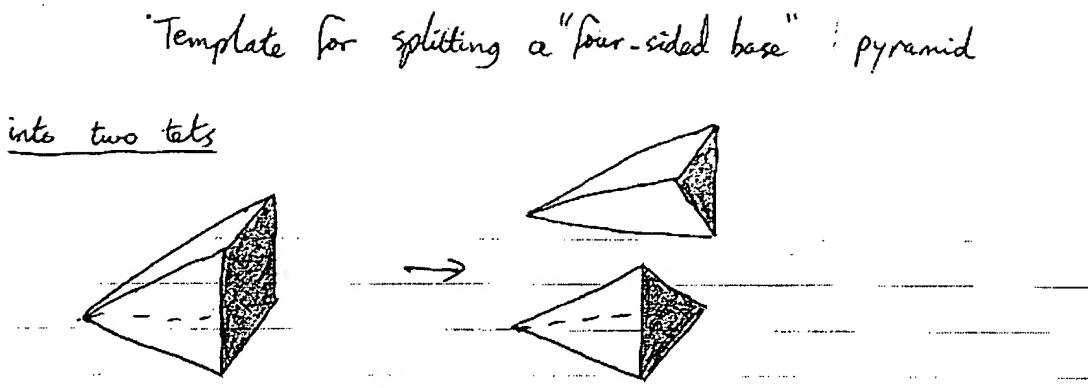
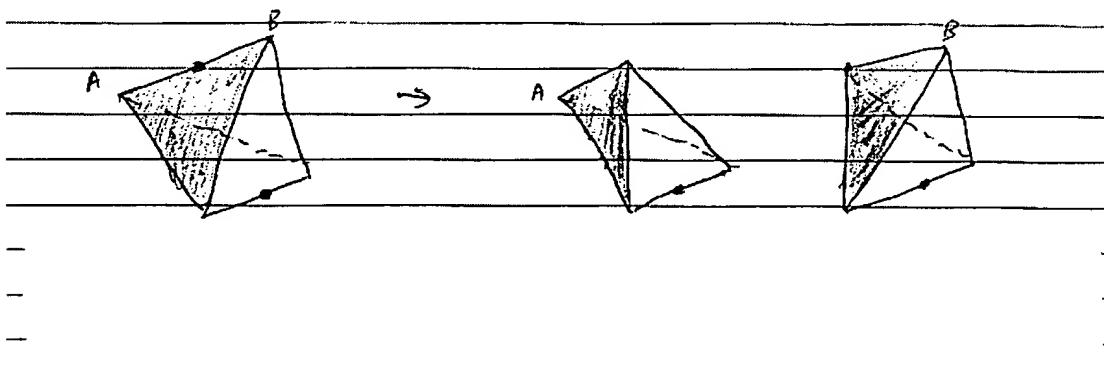


FIG. 13C

Template for splitting a tet on

2 edges (opposite)



The final compact result will be:

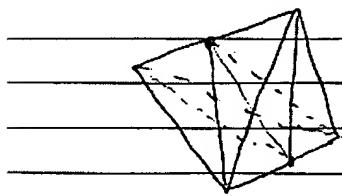
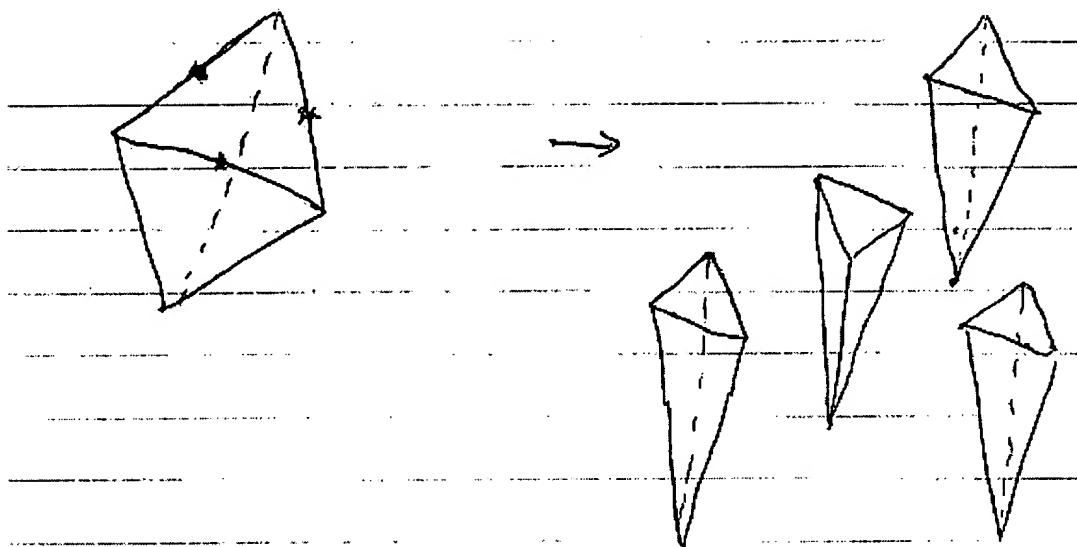
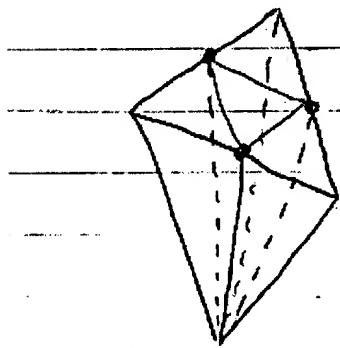


FIG. 14A

Template for splitting a tet on:  
3 edges (shared face)

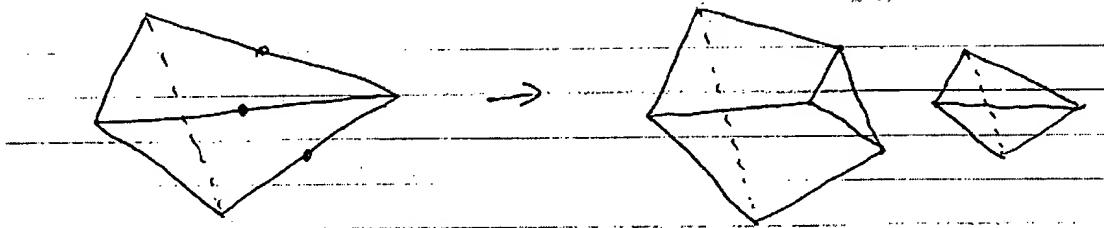


In closed form



## FIG. 14B

Template for splitting a tet on:  
3 edges (non-shared face)



The final result will be:

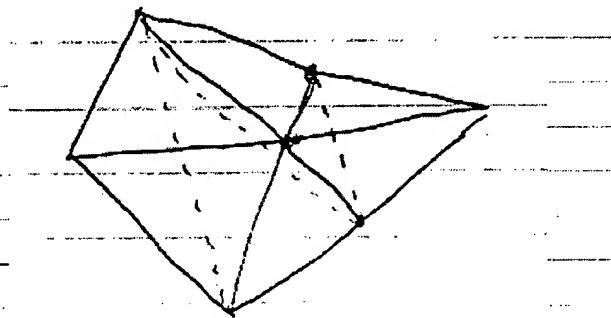
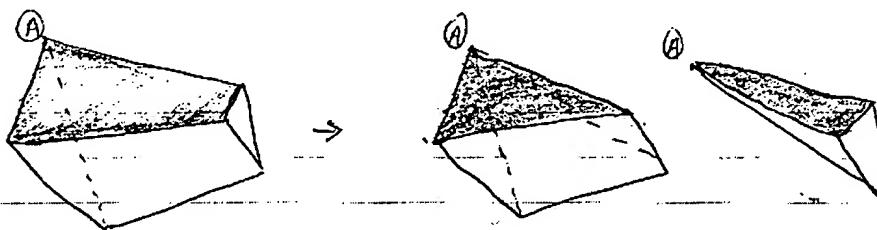


FIG. 14C

Template for splitting a triangular prism



Therefore the final result would be:

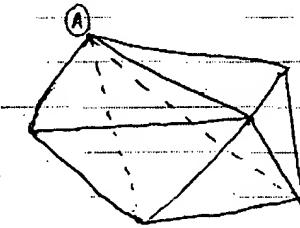


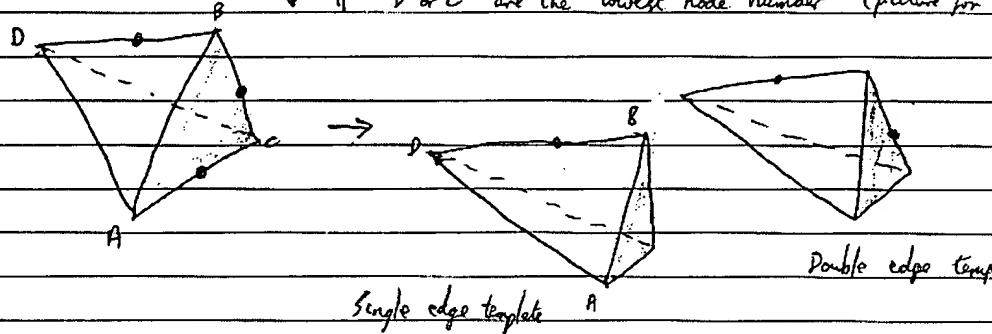
FIG. 14D

Template for splitting a tet on

3 edges (in series)

-non face, non shared point

\* If B or C are the lowest node number (picture for B).



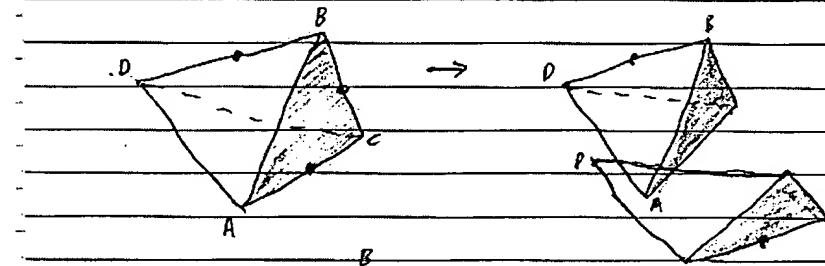
Final result

all faces are either

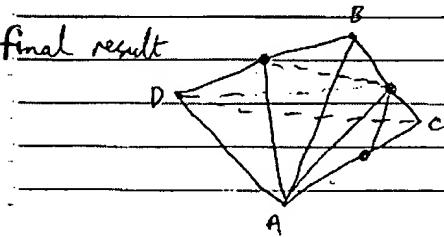


\* If A or D are the lowest node number

These two bodies  
can be further  
split by the single  
edge template

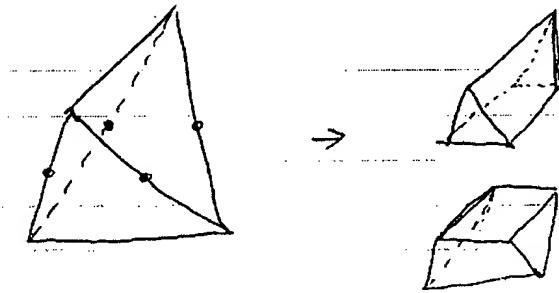


final result

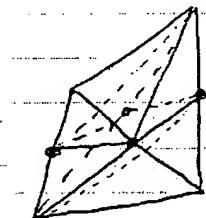


# FIG. 15A

Template for splitting a tet on  
4 edges (Opposite edges)



The eventual split body in close form



The pattern on each <sup>original</sup> triangular face is:

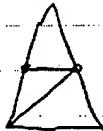
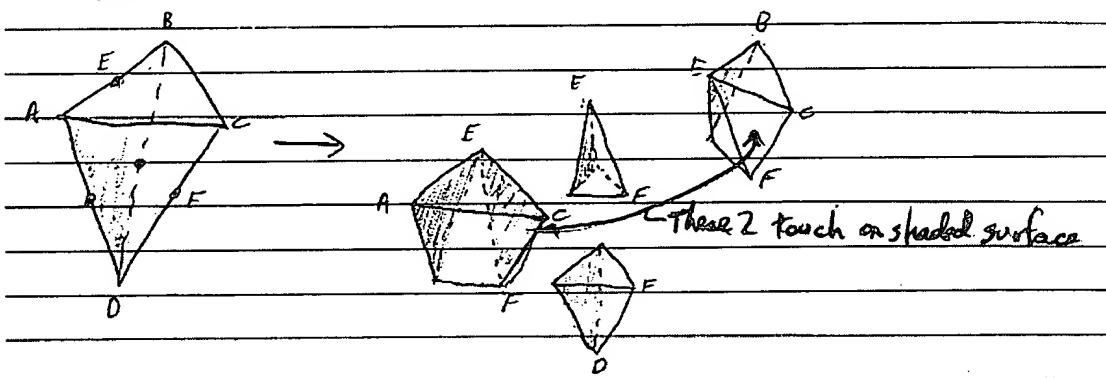


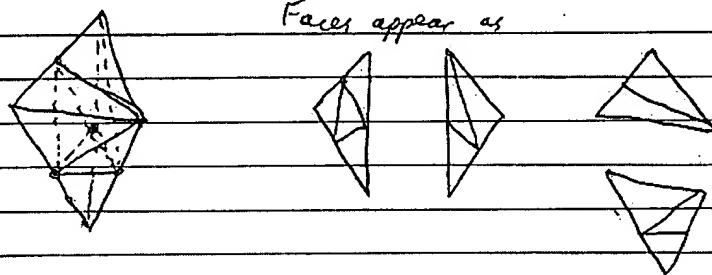
FIG. 15B

Template for splitting a tet on  
4 edges (Adjacent edges)



The compacted original tet is:

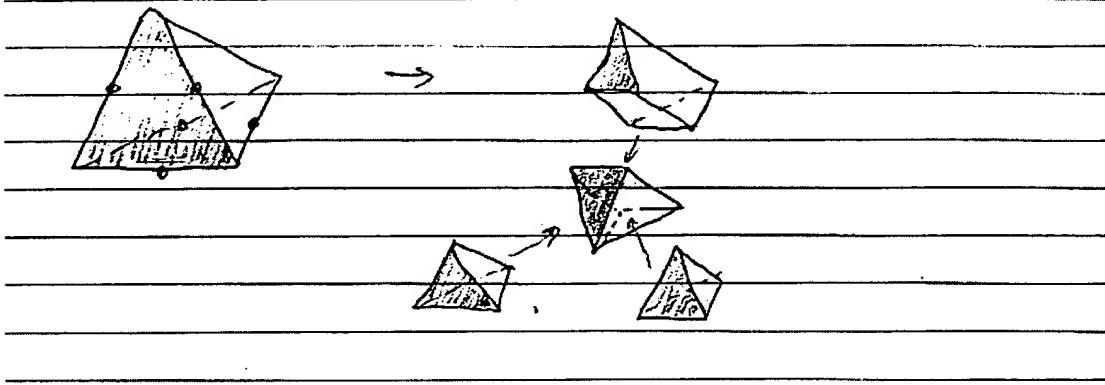
Faces appear as



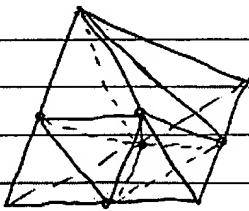
# FIG. 16

Template for splitting a tet on:

5 edges



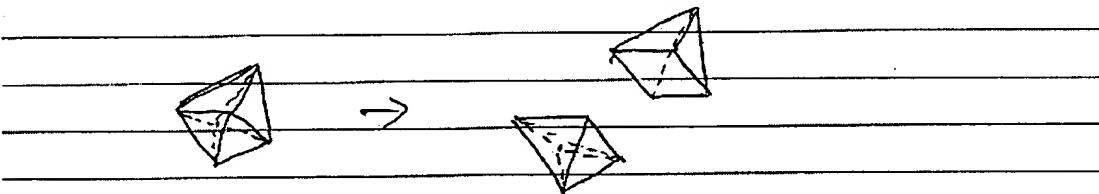
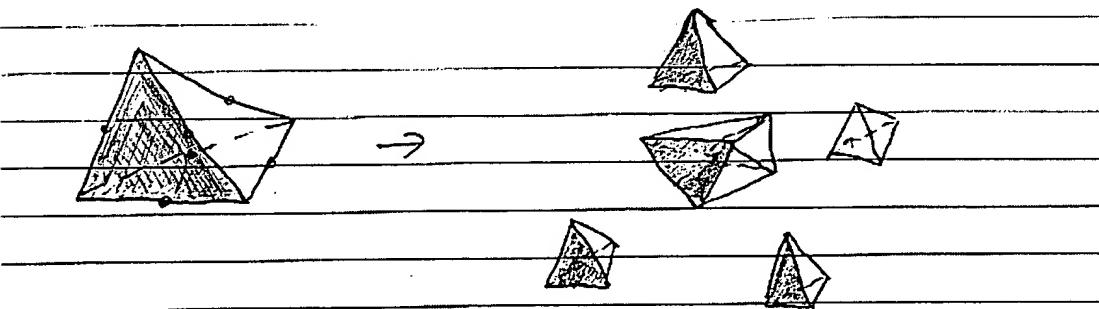
The final compacted result is



# FIG.17

Template for splitting a tet on

6 edges



The resulting compacted body is:

All faces have the follow split pattern

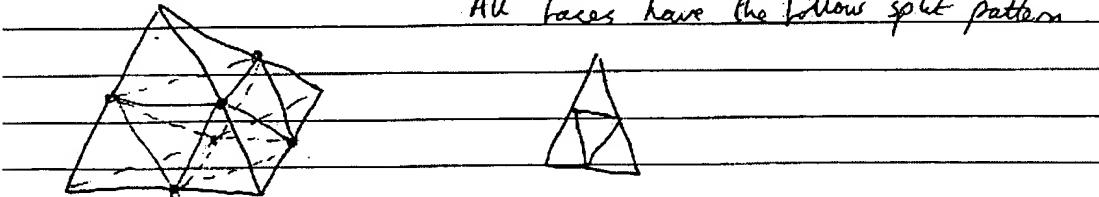


FIG. 18A & 18B

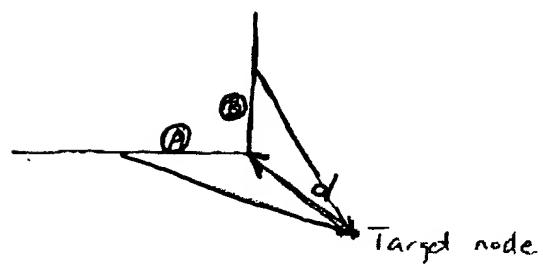
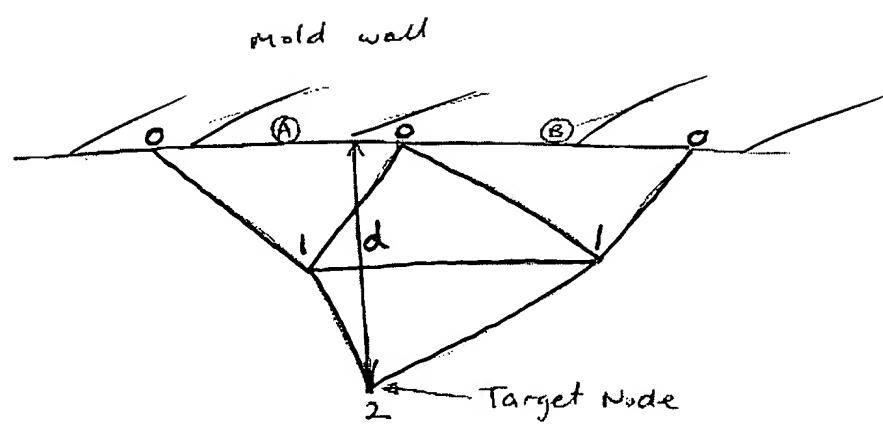


FIG. 19

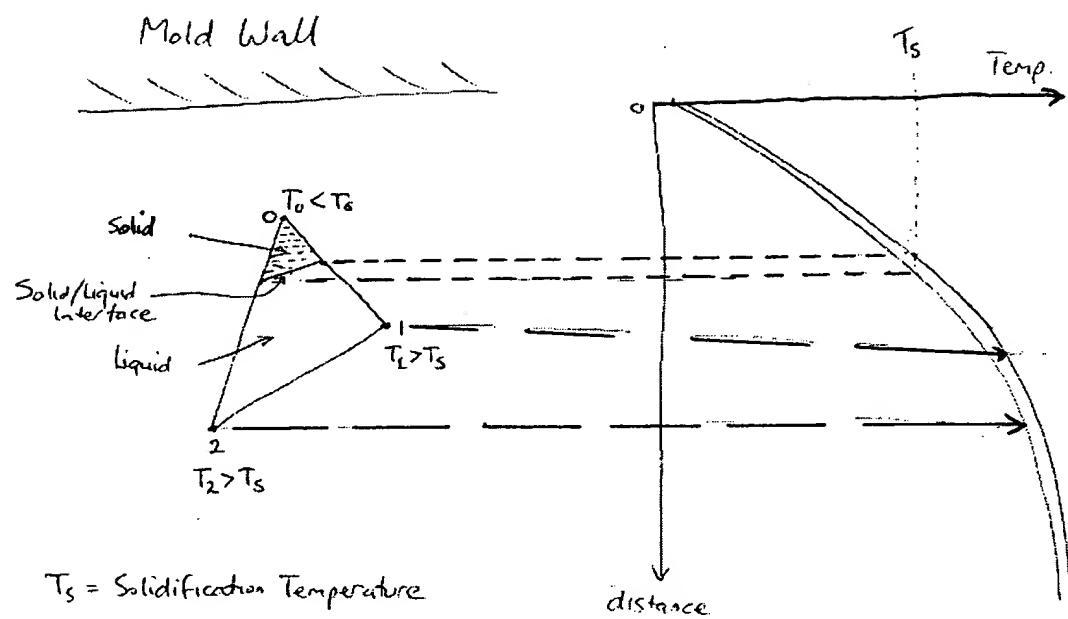


FIG. 20

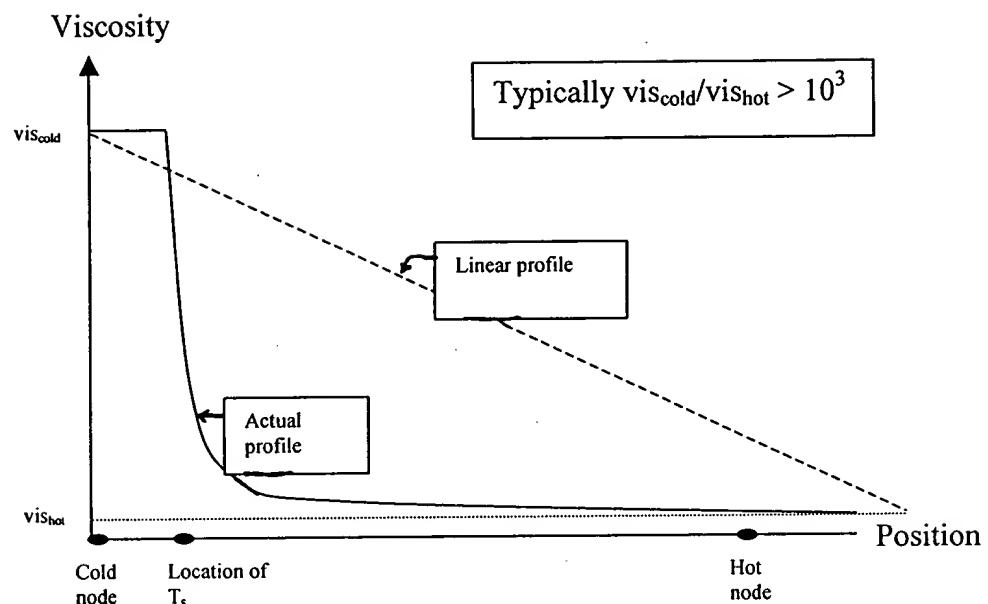


FIG. 21

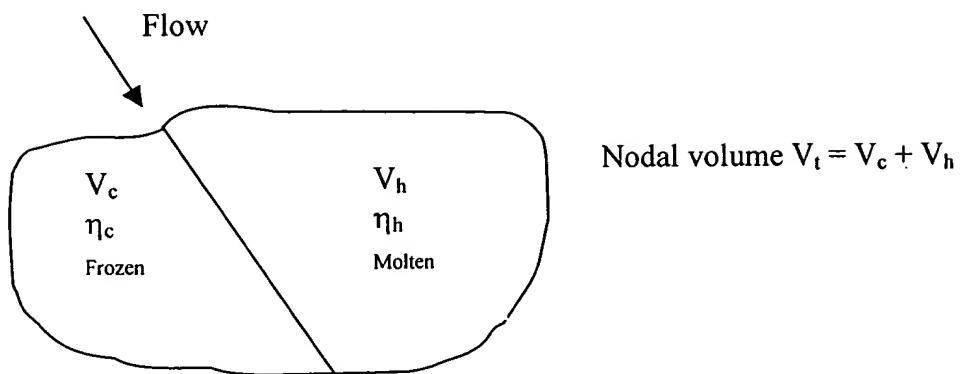


FIG. 22

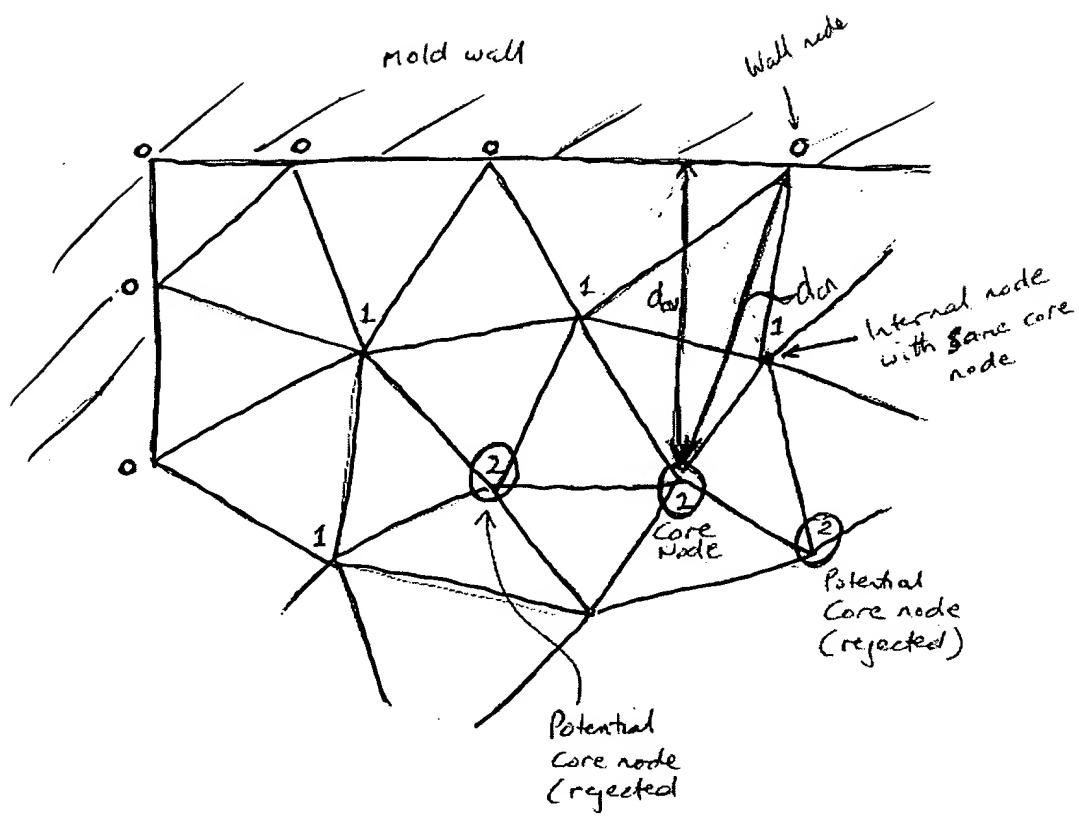


FIG. 23A, 23B, 23C

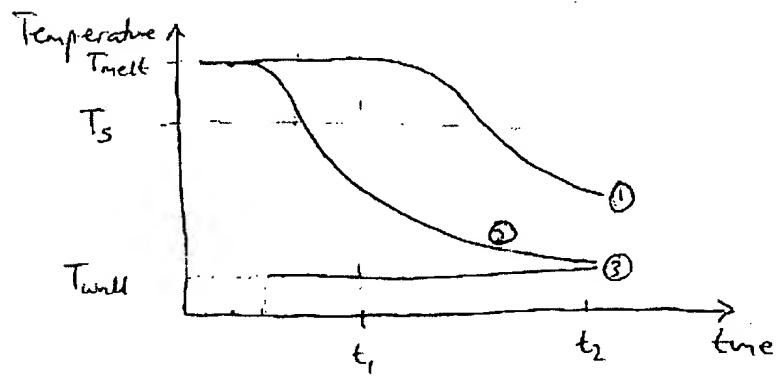
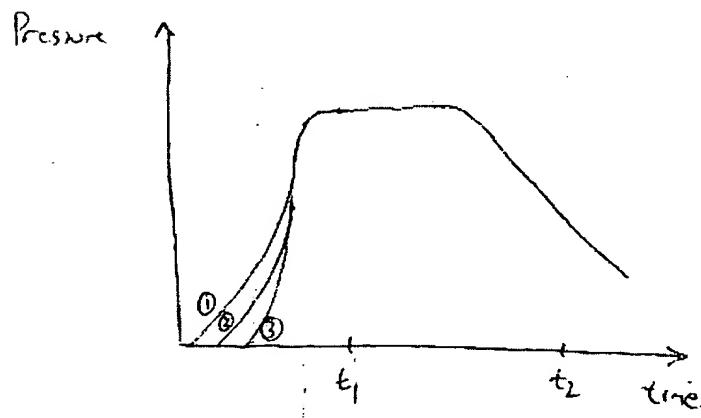
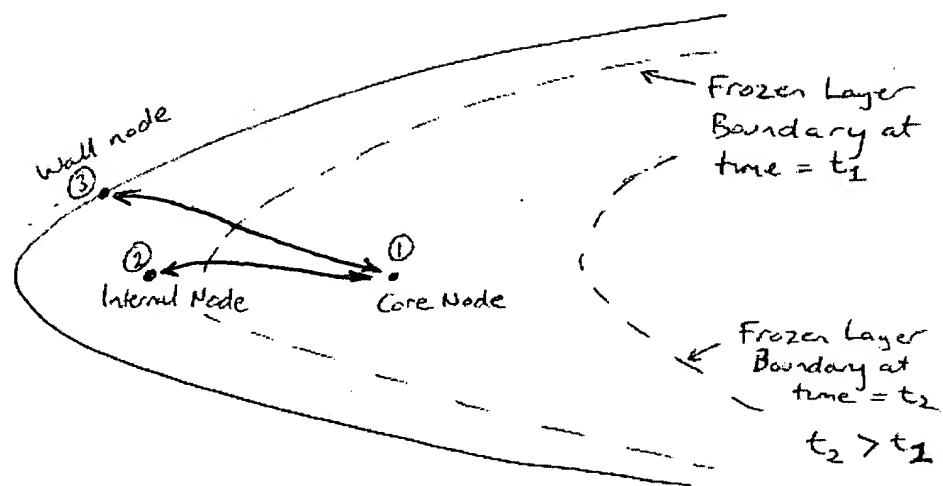


FIG. 24

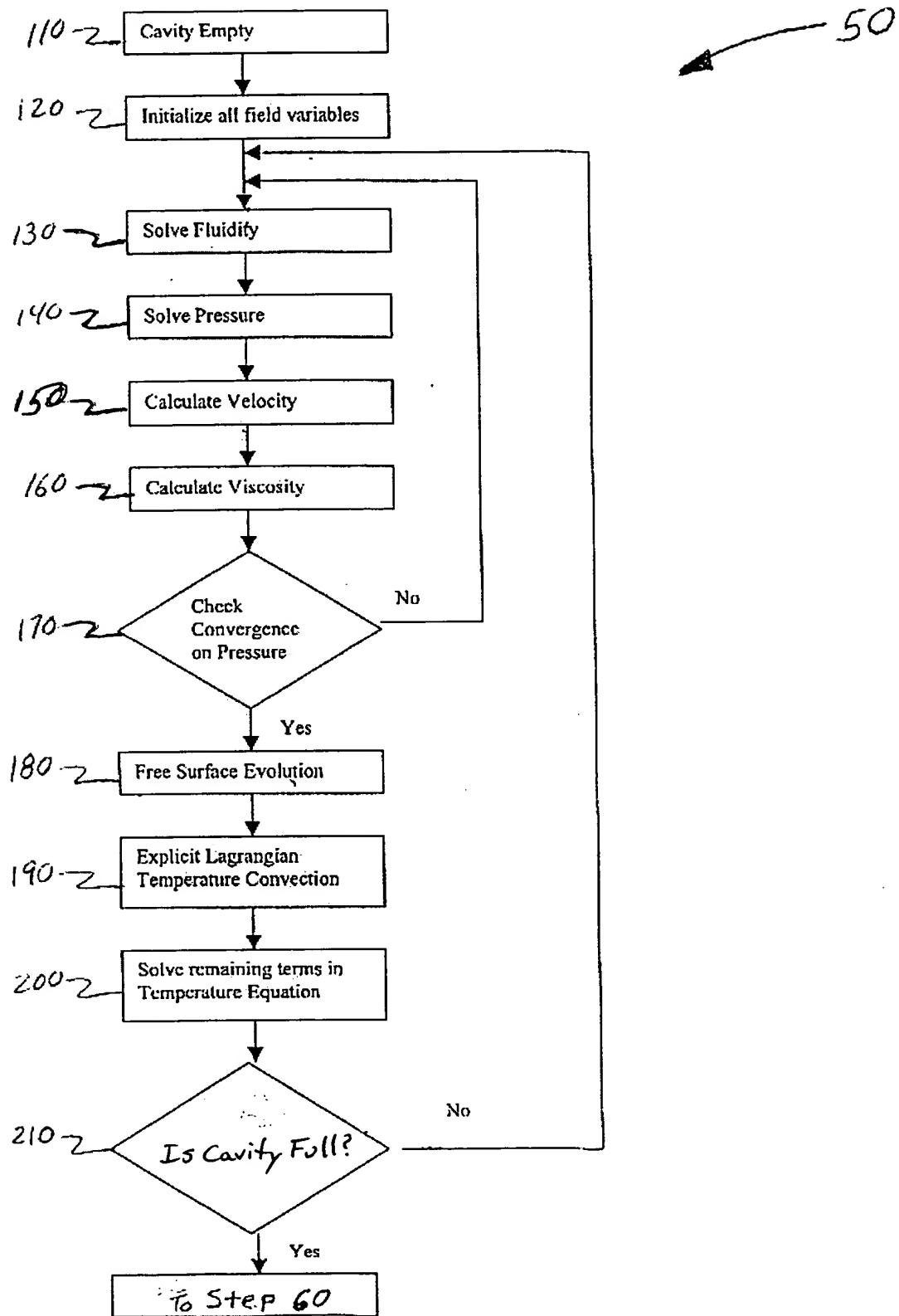


FIG. 25

